```
=> d his

     (FILE 'HOME' ENTERED AT 16:15:25 ON 20 SEP 2006)

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE,
AQUALINE,
     AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA,
CAPLUS,
     CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS,
DRUGB,
     DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 16:15:44 ON 20 SEP
2006
                SEA DEAMIDASE
               ---------
                 6   FILE AGRICOLA
                 3   FILE ANABSTR
                 1   FILE AQUASCI
                 5   FILE BIOENG
               144   FILE BIOSIS
                 5   FILE BIOTECHABS
                 5   FILE BIOTECHDS
                24   FILE BIOTECHNO
                10   FILE CABA
               250   FILE CAPLUS
                 3   FILE CONFSCI
                21   FILE DDFB
                 8   FILE DDFU
                 3   FILE DGENE
                 7   FILE DISSABS
                21   FILE DRUGB
                11   FILE DRUGU
                70   FILE EMBASE
                24   FILE ESBIOBASE
                 7   FILE FROSTI
                 8   FILE FSTA
                19   FILE GENBANK
                10   FILE IFIPAT
                 5   FILE JICST-EPLUS
                25   FILE LIFESCI
               204   FILE MEDLINE
                 1   FILE NTIS
                 2   FILE OCEAN
                34   FILE PASCAL
                 1   FILE RDISCLOSURE
                79   FILE SCISEARCH
                62   FILE TOXCENTER
                91   FILE USPATFULL
                 9   FILE USPAT2
                15   FILE WPIDS
                15   FILE WPINDEX
L1               QUE DEAMIDASE
               ---------

     FILE 'CAPLUS, MEDLINE, BIOSIS, SCISEARCH, EMBASE, TOXCENTER, PASCAL,
     LIFESCI, BIOTECHNO' ENTERED AT 16:19:02 ON 20 SEP 2006
```

```
L2          892 S L1
L3           31 S L2 AND TRANSGLUTAMINASE
L4           16 S L2 AND (CHRYSEOBACTERIUM OR FLAVOBACTERIUM OR
EMPEDOBACTER O
L5           10 DUP REM L4 (6 DUPLICATES REMOVED)

=>
```

=> d l5 ibib ab 1-10

L5 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:523093 CAPLUS
DOCUMENT NUMBER: 141:84625
TITLE: Cloning, characterization and sequence of protein-deamidating enzyme from Chryseobacterium and uses in the food industry
INVENTOR(S): Yamaguchi, Shotaro
PATENT ASSIGNEE(S): Amano Enzyme Inc., Japan
SOURCE: U.S., 28 pp., Cont.-in-part of U.S. 6,251,651.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6756221	B1	20040629	US 2000-727769	20001204
US 6251651	B1	20010626	US 1999-324910	19990603
US 2004072318	A1	20040415	US 2001-793495	20010227
US 6770469	B2	20040803		
US 2004166558	A1	20040826	US 2004-815751	20040402
US 2004175799	A1	20040909	US 2004-815774	20040402
JP 2005052158	A2	20050303	JP 2004-342158	20041126
JP 3769289	B2	20060419		

PRIORITY APPLN. INFO.:

US 1999-324910	A2	19990603
JP 1999-345044	A	19991203
JP 1998-173940	A	19980604
JP 2000-368983	A3	20001204
US 2000-727769	A3	20001204
US 2001-793495	A3	20010227

AB The invention involves an enzyme which removes amido groups from proteins and releases side-chain carboxyl groups and ammonia. The enzyme acts directly on amido groups without cleaving peptide bonds and without crosslinking a protein substrate and is therefore called protein deamidating enzyme. In addition, this invention claims methods for the production of an enzyme, which comprise culturing in a medium a strain that belongs to a bacterium classified into Cytophagales or Actinomycetes, or a new bacterium Chryseobacterium strain 9670, and has the ability to produce an enzyme having property to deamidate amido groups in protein, thereby effecting production of the enzyme, and subsequently collecting the enzyme from the culture mixture The invention also claims polypeptide and

nucleotide sequences for the enzyme from Chryseobacterium strain 9670. A method for the modification of an enzyme using the native or recombinant protein deamidating enzyme and a method and composition for the modification of a protein substrate using the native or recombinant protein deamidating enzyme are also claimed. Methods for use of a recombinant protein deamidating enzyme involve using a gene which encodes the enzyme, a recombinant vector which contains the gene, a transformant transformed with the vector and a method in which the transformant is cultured in a medium to effect production of the protein-deamidating enzyme and then the protein-deamidating enzyme is collected. Uses of the protein deamidating enzyme include for improvement of proteins in food and alterations in protein and food properties such as solubility, foamability, and emulsifying ability. A purified protein deamidating enzyme was obtained from a new microorganism, Chryseobacterium strain 9670, and its activity measured by release of ammonia from Cbz-Gln-Gly and casein assay substrates. Protease and transglutaminase activities of the purified protein deamidating enzyme were not detected. Several protein substrates, including wheat gluten, egg white protein, and soybean protein, were treated with the Chryseobacterium deamidating enzyme and pH-solubility curves of the substrates were determined

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:702816 CAPLUS
DOCUMENT NUMBER: 139:196614
TITLE: Functional improvement milk protein by enzymic deamidation
INVENTOR(S): Matsumura, Yasuo; Mori, Tomohiko
PATENT ASSIGNEE(S): Amano Enzyme Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003250460	A2	20030909	JP 2002-57954	20020304
PRIORITY APPLN. INFO.:			JP 2002-57954	20020304

AB The milk protein (mol.-weight, ≥5,000) is incubated with deamidase of microorganism selected from Chryseobacterium , Flavobacterium, Empedobacterium, etc., for deamidation but not

simultaneous crosslinking. The deamidated milk protein has lower allergenicity, high surface activity, better flavor which is associated with binding of low-mol.-weight off-flavors, higher hydrophobicity, better binding of low-mol.-weight substance such as retinol for enhanced bioavailability, higher susceptibility to protease such as pepsin, etc.

L5 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2001:432945 CAPLUS
DOCUMENT NUMBER: 135:42762
TITLE: Protein-deamidating enzyme, microorganism producing the same, gene encoding the same, production process therefor, and use thereof
INVENTOR(S): Yamaguchi, Shotaro
PATENT ASSIGNEE(S): Amano Enzyme Inc., Japan
SOURCE: Eur. Pat. Appl., 43 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1106696	A1	20010613	EP 2000-310768	20001204
EP 1106696	B1	20050706		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001218590	A2	20010814	JP 2000-368983	20001204
JP 3696500	B2	20050921		
US 2004166558	A1	20040826	US 2004-815751	20040402
JP 2005052158	A2	20050303	JP 2004-342158	20041126
JP 3769289	B2	20060419		

PRIORITY APPLN. INFO.:
JP 1999-345044 A 19991203
JP 1998-173940 A 19980604
US 1999-324910 A3 19990603
JP 2000-368983 A3 20001204
US 2001-793495 A3 20010227

AB The invention involves an enzyme which removes amido groups from proteins and releases side-chain carboxyl groups and ammonia. The enzyme acts directly on amido groups without cleaving peptide bonds and without crosslinking a protein substrate and is therefore called protein deamidating enzyme. The invention also claims polypeptide and nucleotide sequences for the enzyme. In addition, this invention claims methods for the production of an enzyme, which comprise culturing in a medium a strain that

belongs to a bacterium classified into Cytophagales or Actinomycetes, or a new bacterium Chryseobacterium sp. Number 9670 belonging to the genus Chryseobacterium, and has the ability to produce an enzyme having property to deamidate amido groups in protein, thereby effecting production of the enzyme, and subsequently collecting the enzyme from the culture mixture A method for the modification of an enzyme using the native or recombinant protein deamidating enzyme and a method and composition for the modification of a protein substrate using the native or recombinant protein deamidating enzyme are also claimed. Methods for use of a recombinant protein deamidating enzyme involve using a gene which encodes the enzyme, a recombinant vector which contains the gene, a transformant transformed with the vector and a method in which the transformant is cultured in a medium to effect production of the protein-deamidating enzyme and then the protein-deamidating enzyme is collected. Uses of the protein deamidating enzyme include for improvement of proteins in food and alterations in protein and food properties such as solubility, foamability, and emulsifying ability. A purified protein deamidating enzyme was obtained from a new microorganism, Chryseobacterium strain 9670, and its activity measured by release of ammonia from Cbz-Gln-Gly and casein assay substrates. Protease and transglutaminase activities of the purified protein deamidating enzyme were not detected. Several protein substrates, including wheat gluten, egg white protein, and soybean protein, were treated with the Chryseobacterium deamidating enzyme and pH-solubility curves of the substrates were determined

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:84446 CAPLUS
DOCUMENT NUMBER: 132:119242
TITLE: Protein-deamidating enzyme and its Chryseobacterium gleum gene and uses in the food industry
INVENTOR(S): Yamaguchi, Shotaro; Matsuura, Akira
PATENT ASSIGNEE(S): Amano Pharmaceutical Co., Ltd., Japan; Amano Enzyme Inc.
SOURCE: Eur. Pat. Appl., 57 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 976829	A2	20000202	EP 1999-304367	19990604
EP 976829	A3	20000216		
EP 976829	B1	20040602		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000050887	A2	20000222	JP 1999-158703	19990604
JP 3609648	B2	20050112		
US 2004072318	A1	20040415	US 2001-793495	20010227
US 6770469	B2	20040803		
US 2004166558	A1	20040826	US 2004-815751	20040402
PRIORITY APPLN. INFO.:			JP 1998-173940 A	19980604
			US 1999-324910 A3	19990603
			JP 1999-345044 A	19991203
			US 2001-793495 A3	20010227

AB An enzyme is provided which has an activity to release side chain carboxyl groups and ammonia from a protein by acting upon side chain amido groups in the protein. This invention relates to a method for the production of an enzyme, which comprises culturing in a medium a strain that belongs to a bacterium classified into Cytophagales or Actinomycetes has the ability to produce an enzyme having a property to deamidate amido groups in protein, thereby effecting production of said enzyme, and subsequently collecting said enzyme from the culture mixture The gene encoding the enzyme was isolated and sequenced from Chryseobacterium gleum, and shown to encode a 319-residue protein including a 134-amino acid prepro moiety. The protein-deamidating enzyme can be used as a reagent for use in the functional modification of protein, i.e., in protein engineering. Deamidation of plant and animal food proteins results in improved functional properties (solubility and dispersibility) for the preparation of numerous food products. The protein-deamidating enzyme can also be used as a reaction controlling agent for transglutaminase.

L5 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2000:552802 CAPLUS
DOCUMENT NUMBER: 133:277885
TITLE: A novel protein-deamidating enzyme from Chryseobacterium proteolyticum sp. nov., a newly isolated bacterium from soil
AUTHOR(S): Yamaguchi, Shotaro; Yokoe, Masaaki
CORPORATE SOURCE: Gifu R & D Center, Amano Pharmaceutical Co., Ltd.,

Gifu, 509-0108, Japan
SOURCE: Applied and Environmental Microbiology (2000), 66(8), 3337-3343
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A novel protein-deamidating enzyme, which has potential for industrial applications, was purified from the culture supernatant of Chryseobacterium proteolyticum strain 9670T isolated from rice field soil in Tsukuba, Japan. The deamidating activities on carboxybenzoxy (Cbz)-Gln-Gly and caseins and protease activity were produced synchronously by the isolate. Both deamidating activities were eluted as identical peaks separated from several proteases by phenyl-Sepharose chromatog. of the culture supernatant. The enzyme catalyzed the deamidation of native caseins with no protease and transglutaminase activities. Phenotypic characterization and DNA analyses of the isolate were performed to determine its taxonomy. Physiol. and biochem. characteristics, 16S rRNA gene sequence anal., and DNA-DNA relatedness data indicated that the isolate should be placed as a new species belonging to the genus Chryseobacterium. The isolate showed no growth on MacConkey agar and produced acid from sucrose. The levels of DNA-DNA relatedness between the isolate and other related strains were less than 17%. The name Chryseobacterium proteolyticum is proposed for the new species; strain 9670 is the type strain (=FERM P-17664).

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 10 MEDLINE on STN
ACCESSION NUMBER: 84195167 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6371900
TITLE: Proline specific endopeptidase.
AUTHOR: Yoshimoto T; Tsuru D
SOURCE: Tanpakushitsu kakusan koso. Protein, nucleic acid, enzyme, (1984 Feb) Vol. 29, No. 2, pp. 127-33. Ref: 38
Journal code: 0413762. ISSN: 0039-9450.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
LANGUAGE: Japanese
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198406
ENTRY DATE: Entered STN: 19 Mar 1990
Last Updated on STN: 3 Mar 2000
Entered Medline: 19 Jun 1984

L5 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 1980:464192 CAPLUS

DOCUMENT NUMBER: 93:64192
TITLE: Nicotinamide deamidase from Flavobacterium peregrinum
AUTHOR(S): Tanigawa, Yoshinori; Shimoyama, Makoto; Ueda, Iwao
CORPORATE SOURCE: Dep. Biochem., Shimane Med. Univ., Shimane, 693, Japan
SOURCE: Methods in Enzymology (1980), 66(Vitam. Coenzymes, Pt. E), 132-6
CODEN: MENZAU; ISSN: 0076-6879
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 9 refs.

L5 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4
ACCESSION NUMBER: 1973:107633 CAPLUS
DOCUMENT NUMBER: 78:107633
TITLE: Purification and properties of nicotinamide deamidase from Flavobacterium peregrinum
AUTHOR(S): Tanigawa, Yoshinori; Shimoyama, Makoto; Dohi, Kakuo; Ueda, Iwao
CORPORATE SOURCE: Dep. Med. Chem., Osaka Med. Coll., Osaka, Japan
SOURCE: Journal of Biological Chemistry (1972), 247(24), 8036-42
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nicotinamide deamidase from F. peregrinum was purified .apprx. 210-fold with the use of protamine and McCl2 treatments, acetone fractionation, (NH4)2SO4 fractionation, Sephadex G-200, and CM-Sephadex column chromatography. The optimum pH of the purified nicotinamide deamidase is 6.5, and the Km value for nicotinamide is 0.2μM. The molecular weight was estimated by means of gel filtration to be 48,000. The enzyme activity of the crude preparation was increased by 2.5-fold by addition of Mn2+ at a concentration of 10mM followed by incubation at 37° for 30 min. The purified enzyme preparation was inactivated by dialysis in the absence of Mn2+, and no recovery of enzyme activity was possible even when Mn2+ or Mn2+ plus cysteine was added to the reaction mixture. When the enzyme was dialyzed overnight in the presence of Mn2+, almost all of the enzyme activity was retained. A dialysis of the enzyme against 0.01M maleate buffer (pH 6.5) containing 5μm HgCl2 resulted in complete retention of enzyme activity when 50mM cysteine was added to the reaction mixture. CuSO4 and SnCo2 also showed effects similar to that of HgCl2, but their potency for enzyme stability was small. Mg2+, Ni2+, Zn2+, and Fe2+ did not show any effect on enzyme activity. All the nicotinamide analogs having a trivalent N in the pyridine ring showed a competitive inhibition of nicotinamide deamidation, whereas compounds having a tetravalent N seemed to have no effect. From

these results the structure of the enzyme-metal-substrate complex proposed was that of a triangle with each of the 3 components being bound to each other.

L5 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5
ACCESSION NUMBER: 1973:68603 CAPLUS
DOCUMENT NUMBER: 78:68603
TITLE: Nicotinamide deamidase of microorganisms isolated from rat stomach
AUTHOR(S): Tanigawa, Yoshinori
CORPORATE SOURCE: Dep. Med. Chem., Osaka Med. Coll., Takatsuki, Japan
SOURCE: Bulletin of the Osaka Medical School (1972), 18(1), 30-47
CODEN: BUOSA5; ISSN: 0030-6142
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Almost all stomach nicotinamide deamidase (I) activity was localized in the pars preventricularis of normal rats, but no activity was found there in the germ-free rats. I activities were found, in decreasing order of potency, in Flavobacterium peregrinum, Escherichia coli, Streptococcus faecalis, and Lactobacillus acidophilus. I from F. peregrinum was purified in the presence of Mn++, about 70-fold. The Km value for nicotinamide was 2 + 10-7M and the pH optimum was 7.0. If purification was carried out in the absence of Mn++, the enzyme activity decreased, with 1% recovery at the final step of purification. The purified I was inactivated through dialysis against a large volume of 0.01M malate buffer, pH 7.0, in the absence of Mn++ and its activity was not recovered by the subsequent addition of Mn++ or Mn++ plus cysteine. If the dialysis was carried out in the presence of Mn++ or Hg++, the activity remained intact. With Hg++ this effect was only observed with cysteine in the reaction mixture The half-maximum level of the Mn++ and Hg++ effects for enzyme stabilization during dialysis were 4.5 + 10-5M and 1.25 + 10-6M, resp. EDTA led to a decrease in enzyme activity but this decrease could be completely restored by Mn++.

L5 ANSWER 10 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1971:537838 CAPLUS
DOCUMENT NUMBER: 75:137838
TITLE: Nicotinamide deamidation by microorganisms in rat stomach
AUTHOR(S): Shimoyama, Makoto; Tanigawa, Yoshiniri; Ito, Toichi; Murashima, Ryuzo; Ueda, Iwao; Tomoda, Tsunesuke
CORPORATE SOURCE: Dep. Med. Chem., Osaka Med. Coll., Takatsuki, Japan
SOURCE: Journal of Bacteriology (1971), 108(1), 191-5
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal

LANGUAGE: English

AB The bacterial species in the pars preventricularis were identified as Flavobacterium peregrinum, Escherichia coli, Streptococcus faecalis, and Lactobacillus acidophilus, listed in order of decreasing deamidase activity. Nicotinamide-7-14C ingested into rat stomach was rapidly deamidated to nicotinic acid. These results contribute to the accumulated evidence that microorganisms present in the pars preventricularis of rat stomach are responsible for the deamidation of nicotinamide to nicotinic acid, a known precursor of mammalian pyridine nucleotides.

=>